

## ORNITHOLOGICAL LITERATURE

NESTING ECOLOGY OF CANADA GESE IN THE HUDSON BAY LOWLANDS OF ONTARIO: EVOLUTION AND POPULATION REGULATION. By D. G. Raveling and H. G. Lumsden. Ontario Ministry of Natural Resources, Fish and Wildlife Research Report No. 98, 1977: 77 pp., photographs, maps, graphs, paper cover. \$3.50. (Available from Ontario Government Bookstore, 880 Bay St., Toronto, Canada M5S 1Z8.)—The main purposes of this report are “to present the results of investigations of apparent optimum and accomplished reproductive rates, habitat preferences, and density and spacing of nests in relation to the regulation of population size.” This use of terminology is unfortunate as the report contains nothing about “population regulation.” Rather, the emphasis is on factors limiting population size. The study is, in effect, the breeding and population biology of the Mississippi Valley Population (MVP) of Canada Geese (*Branta canadensis interior*). The geese nest in the Hudson Bay Lowlands and winter in southern Illinois, western Kentucky, southeastern Missouri and western Tennessee. The nesting study was done during 1967, 1968, and 1969 at Kinojc Lake (90 km west-northwest of Moosonee) and a surrounding area of 412 km<sup>2</sup>. The MVP is one of the most important populations of Canada Geese in North America, both economically and in terms of its numbers. Before this report, very little was known of the subspecies' breeding habits and adaptations to the northern environment.

The report is presented in 2 sections: Nesting Ecology (Part I) and Population Limitations (Part II). Part I includes a 2 page description of snow conditions, precipitation, ice conditions, water levels and air temperatures on the study area. The remainder discusses the usual breeding biology topics such as arrival on the nesting grounds, egg-laying, nesting habitat, spacing of nests, clutch-sizes, nesting success, predation and general behavior. The authors report that as open water prevails at the nesting area, the geese disperse over the available habitat. Arrival in the north coincided with the average time of snow thaw and initial open water. Preferred nesting habitat consisted of small ponds (0.4-2 ha) containing 2 or more low, small islands that provided protection from predators throughout the nesting season. Nest success averaged 80%. Most nest losses were attributed to predators such as Ravens (*Corvus corax*), Herring Gulls (*Larus argentatus*), wolves (*Canis lupus*) or red foxes (*Vulpes fulva*).

The authors discuss at length their ideas on the evolution of clutch-size. This is the only section of the report that discusses evolution. They suggest that clutch-size may have evolved so that egg-laying ceases when the accumulated spring reserves are depleted to the point where the post-laying body weight approximates that of the winter body weight. The incubation period is thus described as a starvation regime. Unfortunately their hypothesis is based on the collection of only 4 late-nesting females. Certainly the authors erred in not considering recent work on the evolution of clutch-size in the Lesser Snow Goose (*Anser caerulescens caerulescens*), which, for the most part, counters their proposed scheme.

Part II is a compilation of data on winter distribution, population size, and mortality: the major objective “was to examine the nesting ecology of MVP Canada Geese to provide insight into the factors limiting their numbers.” The size of the MVP, after most mortality from hunting, averaged 350,000 geese between 1966 and 1970 (from winter inventories in Wisconsin and Illinois). The authors conclude that “the population was clearly not limited on the summer range” and that “winter mortality was the major limiting factor for MVP geese and this mortality was overwhelmingly accounted

for by hunting." These conclusions are not justified by their data. For example, in 1967 (a "retarded spring nesting season") they calculated that non-nesting and mortality of broods depressed the autumn population by 13% (37,000 geese) over that expected from an excellent nesting season; the calculated hunter kill that autumn/winter was 36,000 geese. More significantly, in 1968, "an excellent nesting season," 147,000 goslings (of 270,000 hatched) died before October; hunters killed 43,000 geese that autumn. Clearly, some limitation of population size occurs on the breeding grounds. The data suggest that mortality from hunting is largely density-independent, probably because the kill is controlled by a quota system. As the authors have little data on whether gosling mortality is caused by density-dependent or independent factors, they are unable to say what is regulating population size (wolf predation on nests was density-dependent). The authors concluded that the nesting grounds could support additional geese if the conditions recorded during this study prevail; unknown, however, is whether the additional breeding geese would have resulted in a net increase in gosling production. From a wildlife management viewpoint, hunting is certainly the mortality factor most easily manipulated. Thus the authors rightly suggest that the harvest in non-quota areas, such as the Kentucky side of the Ohio River, should be closely monitored.

This monograph contains numerous data: 54 tables, 34 figures, 2 appendices. There are 123 references, the latest of which is unfortunately 1974. The use of the word "predated," referring to what predators do to goose nests and eggs, is undefined in our dictionaries. Although we did not check all the statistics, there is an error in Table 39. The student's *t* value of 1.78 under "width of eggs" results in  $P > 0.05$  instead of the reported  $P < 0.05$ .

For anyone interested in avian ecology, population biology and/or boreal ecology, this report is interesting and provides an opportunity for the serious investigator to compare the results with concurrent and later work, now in the literature, on other arctic and subarctic nesting geese. —JOHN P. RYDER and C. DAVISON ANKNEY.

THE BIRD WATCHER'S DIGEST. A new bimonthly magazine reprinting popular articles about birds from North American newspapers. Price: \$1.50 per copy, or \$7.50 per year in the U.S. and territories, \$9.00 elsewhere. Pardson Corp., Box 110, Marietta, OH 45750.

BIRD BEHAVIOUR. This is a new journal of avian behavior and behavioral ecology. Two numbers have been published; the original name *The Babbler* having been changed with volume I, number 2. The price is 75 cents (Australian) an issue. For further information write to J. J. Counsilman, Box 115, Indooroopilly, Queensland, Australia 4068.

IMPACTS OF TRANSMISSION LINES ON BIRDS IN FLIGHT. By Michael L. Avery (ed.). Biological Services Program, U.S. Fish and Wildlife Service, 1978: 151 pp., paper cover. Price not given. Document FWS/OBS-78/48. For sale by Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

AVIAN MORTALITY AT MAN-MADE STRUCTURES: AN ANNOTATED BIBLIOGRAPHY. By Michael L. Avery, Paul F. Springer, and Nancy S. Dailey. Biological Services Program, U.S. Fish and Wildlife Service, 1978:108 pp., paper cover. Price not given. Document FWS/OBS-78/58. Available as stock number 024-010-00472-0 from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

SPECIES INDEX TO FLORIDA BIRD RECORDS IN AUDUBON FIELD NOTES AND AMERICAN BIRDS, VOLUMES 1-30, 1947-1976. By Margaret Coon Bowman. Special Publication No. 1, Florida Ornithological Society, 1978: 42 pp., paper cover. \$3.75.—Available prepaid from the Treasurer, Florida Ornithological Society, 1701 NW 24th Street, Gainesville, FL 32605.

BIRDS OF THE SOUTHWEST PACIFIC. By Ernst Mayr. Charles E. Tuttle Co., Rutland, VT, 1978 (1945): 316 pp., 3 color plates, 16 line drawings, map. \$5.75.—This is a reprint of the 1945 book. The first part deals with birds arranged by taxa, in 3 chapters covering seabirds, shorebirds, and land and freshwater birds. The second part contains 7 chapters reviewing the birds by geographical regions, specifically Samoa; Fiji, Tonga, and neighboring islands, New Caledonia and Loyalty Islands; the New Hebrides and Banks Islands; the Santa Cruz Islands; the Solomon Islands, and Micronesia.—R.J.R.

GUIDE TO THE IDENTIFICATION AND AGEING OF HOLARCTIC WADERS. By A. J. Prater, J. H. Marchant and J. Vuorinen. British Trust for Ornithology Field Guide No. 17, British Trust for Ornithology, Tring, Herts., England. 1977. 168 pp., 1 color plate (2 photos), 16 black and white plates (32 photos), 10 figures and numerous text illustrations. £2.50 or \$6.00 (U.S.), including postage.—This book is a 'must' for all banders trapping shorebirds in North America and for anyone else who is interested in improving their ability to age shorebirds both in the hand and in the field. Very little useful information has been brought together previously on this topic and the present volume goes a long way towards filling the gap. Much of what has been previously available has either been scattered through the literature in papers or handbooks, often in a form not very suitable for field use, or has dealt with anatomical techniques (e.g., bursa of Fabricius, cranial pneumatization) which are either inapplicable to live birds or of no value for shorebirds (R. McNeil and J. Burton, *Wilson Bull.* 84:329-339, 1972), or flight feather characters which appear to be unreliable (J. Burton and R. McNeil, *Bird-Banding* 47:201-209, 1976). The authors have drawn together information obtained from shorebird collections in various museums, as well as from extensive field observations made by banders throughout the world, to present a series of plumage and structural characters that may in many instances enable the age of the bird to be readily determined, and which may be of use in determining its sex or racial origin.

The book itself covers 117 species of shorebirds breeding in the Palearctic and Nearctic faunal regions and is thus equally useful to European and North American workers. For each species, information is presented on distribution and migration, identification, ageing, sexing, geographical variation and biometrics. References on particular topics are listed with each species account and there is also a general bibliogra-